Art. XVII.—*On a New Species of Pennatulid* (Sarcophyllum bollonsi).

By W. B. Benham, D.Sc., Professor of Biology in the University of Otago.

[*Read before the Otago Institute, 14th August,* 1906.]

Plate VI.

This species is the only representative of the "sea-pens" or "sea-feathers" belonging to the "pinnate" division of the pennatulids that has as yet been recorded from the coastal waters of New Zealand, though the more delicate rod-like form (*Virgularia gracillima*) has been known for some years.* The present specimen was dredged by Captain Bollons, of the Government steamship "Hinemoa," in Doubtful Sound, on the west coast of the South Island, in a depth of 40 fathoms of water; and I have to thank Mr. Hamilton, the Director of the Colonial Museum, to which it was presented, for the opportunity of examining and describing it.

Class ACTINOZOA.

Order PENNATULACEA.

Fam. Pennatulidæ.

Sarcophyllum bollonsi, Benham, Zool. Anz. xxxi, p. 66.

The "vane" of the feather is only slightly longer than the "peduncle," or naked portion of the stem. It has a rounded outline, the broadest region being near the apex, which is rounded. The "pinnæ" are only slightly sickled-shaped; they are rather thick, fleshy, and bear a single row of autozooids (polyps) in an undulating line along the metarachidian ("dorsal") margin. The prorachidian (or "ventral") edge is curved near the free end. The basal margin, or line of attachment to the stem (rachis), is short. There are thirty pairs of pinnæ, which (in the present specimen) meet across the rachis, with the exception of the last four on each side. The siphonozooids form a conspicuous cushion-like thickening on the proximal portion of the prorachidian margin, and this cushion extends on to the lower surface of the pinna as a very distinct "zooid plate," and for a much less extent passes over on to the upper surface. The "zooid plate" on the under-surface extends across the

* Dendy, Trans. N.Z. Inst., xxix, 256.

pinna close to the rachis, and reaches the metarachidian (" dorsal ") margin.

The Axis.—The peduncle, which is nearly as long as the rachis (or upper portion of the axis) is distinctly swollen immediately below the " vane " ; the free end or apex is rounded. The rachis is quite narrow on the metarachidian (dorsal) surface, being 6 mm. wide in the middle of the vane. At the distal extremity this surface bears a cushion of siphonozooids, extending between the uppermost five pinnæ, and occupying the whole of the surface. The prorachidian (ventral) surface is smooth, and presents no features of importance.

Dimensions.	Mm.
Total length	155
Length of vane	80
Length of peduncle	75
Breadth of peduncle	14
Breadth at swollen region	21
Breadth of rachis in middle of vane	14
Breadth of vane (greatest)	70
Length of prorachidian, edge of pinna	32
Greatest breadth of pinna	21
Height of pinna (in middle of vane)	18
Length of basal margin	8
Number of pinnæ	30

Remarks.

The colour of the specimen appears to have been pale-red in life, as traces of a reddish tint existed on the pinnæ when first received by me. The specimen had been well preserved in strong alcohol, but had undergone a slight amount of flattening at each end owing to having been put into a jar just too small for it.

I supposed at first that this pennatulid was a member of the Australian species, *S. grande*, Gray (*S. australe*, Köll.), but fortunately specimens of this species were available in the Museum, and by the kindness of Professor Haswell I have been able to study Kölliker's description and figures, and a careful comparison has satisfied me that I am justified in forming a new species for the present specimen. The two differ in—(*a*) the general form of vane ; (*b*) the proportions of vane and peduncle ; (*c*) the form of pinna, which is much more sickle-shaped in *S. grande* ; (*d*) the number of rows of autozooids ; (*e*) the size and arrangement of the spicules in the pinnæ ; (*f*) the form of the large " calcareous bodies " in the deep tissues of the

peduncle; (*g*) the form and extent of the cushion of siphonozooids on the pinnæ; and (*h*) the arrangement of the siphonozooids on the rachis.

I propose to give a more detailed account of the species in another place.

EXPLANATION OF PLATE VI.

Fig. 1. *Sarcophyllum bollonsi* (natural size); only on one side are the zooids indicated on the edges of the pinnæ: *a*, peduncle; *b*, vane; *c*, pinnæ (dorsal margins).

Fig. 2. Apex of the colony, with pinnæ pushed apart to show the siphonozooids: *a*, apex; *b*, pinnæ; *c*, siphonozooids; *d*, rachis.

Fig. 3. A single leaflet or pinna seen from below: *a*, cushion of siphonozooids; *b*, base of attachment to axis; *c*, ventral margin; *d*, dorsal or polyp-igerous margin, with polyps (autozooids) diagrammatically represented.

Art. XVIII.—*Recent Observations respecting the Origin of the Vegetable Caterpillar.*

By G. V. Hudson, F.E.S.

[*Read before the Wellington Philosophical Society, 6th June*, 1906.]

In the "Transactions of the New Zealand Institute" for 1903, page 170, Mr. Alfred Philpott states that he has practically reared *Porina dinodes* from a healthy larva which precisely agreed in structure with larvæ attacked by the *Sphæria* fungus and popularly known as "vegetable caterpillars." Since this time two additional facts have come under my notice indicating that "vegetable caterpillars" belong to several distinct species of Hepialid larvæ, and throwing considerable light on the origin of these remarkable objects.

Several years ago the late Mr. N. J. Tone, who was then Secretary to the Wellington Acclimatisation Society, called me into his office to see a specimen of vegetable caterpillar which he had found in the trunk of a tree and had kept in the same position as it had occupied when he discovered it. On examination I at once recognised the insect as a larva of *Hepialus virescens*, and the portion of the tree-trunk with the burrow in which this larva was situated precisely agreed with the usual habitat of that species. I informed Mr. Tone at the time that